

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Backes	
Application No.: 10/781157	Group Art Unit: 2616
Filed: 02/18/2004	
Title: Method for Selecting an Optimum Access Point in a Wireless Network	Examiner: Nguyen
Attorney Docket No.: 160-030	

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APPELLANT'S BRIEF PURSUANT TO 37 C.F.R. § 1.192

This Appellant's brief is hereby submitted in accordance with a contemporaneously filed Notice of Appeal.

I. Real Party in Interest

The real party in interest is Autocell Laboratories, Inc.

II. Related Appeals and Interferences

Appellants are not aware of any appeals or interferences that are related to the present appeal.

III. Status of the Claims

Claims 1-12 are pending in this application. Claims 1-5, 11 and 12 are rejected. Claims 6-10 are withdrawn from consideration. The claims are listed in Appendix A.

IV. Status of Amendments

An amendment after final was submitted on February 27, 2007. That amendment was entered and considered by the Examiner.

V. Summary of Claimed Subject Matter

The subject matter of the pending claims is generally related to roaming in a wireless network. Wireless terminals such as phones, PDAs, laptops, and other mobile devices (“stations”) obtain network access by becoming associated with a fixed location device (“access point”). In the most basic configurations of the prior art, a station will remain associated with an access point until the wireless communication link between the station and the access point fails, e.g., when the

station roams (moves) too far away from the access point. Recently, more sophisticated techniques have been proposed to cause a station to migrate to a different access point before communication link failure. The pending claims recite a method for selecting access points in support of migration decisions. In particular, the method ascertains whether an alternative access point is a superior candidate based on distance, load and available data rate.

With regard to support for the elements recited in claim 1, the specification states that a station will send a Bid message to an AP that is “better” than the STA’s current AP.¹ The notion of what constitutes a better AP takes into account the distance to the AP, the available data rate, and the loading (number of associated stations).² The distance calculation is described in greater detail at page 39. The available data rate calculation is described in greater detail at page 52. The element of requesting association is supported in the Specification at page 44 in the description of “Bidding,” under section 4, *STA Optimization*.

The limitation recited in claim 2 of the wireless device automatically collecting information about alternative access points is supported in the Specification at page 48, which describes building a table including TP Backoff indicators from beacons and DRCP Announce messages.

The limitation in claim 3 of ascertaining that the wireless device should attempt to associate with the alternative access point if the alternative access point is closer than the current access point in terms of a biased distance is supported in

¹ Page 41, last full paragraph

² Top of page 51

the specification in section 4.c.2 *Biased Distance Calculation*, beginning at page 55, and particularly at page 56.

The limitation in claim 4 is supported at pages 52 and 53.

The limitation in claim 5 of requesting association by sending a message to the alternative access point is supported in the specification at page 44 in the description of “Bidding,” under section 4, *STA Optimization*.

The limitation in claim 11 is supported at pages 38-39.

The limitation in claim 12 is supported at page 52.

VI. Grounds of Rejection to be Reviewed on Appeal

A. Claims 1-5 and 11 are rejected under 35 USC 103(a) based on English in view of Pinard.

B. Claim 12 is rejected under 35 USC 103(a) based on English in view of Pinard further in view of Parks.

VII. Argument

A. The combination of English and Pinard fails to suggest that a wireless device base a migration decision on available data rate, load and distance.

The Examiner concedes that English fails to teach the limitation of using available data rate and load to select an alternative access point. However, the Examiner maintains that Pinard teaches those limitations. In particular, with regard to selecting an access point based on available data rate the Examiner cites Pinard at column 5, lines 26-31 and column 7, lines 26-31. Appellants assert that neither of those passages support the Examiner's argument. The passage at column 7 states "the system has been improved by adjusting the sensitivity so that a mobile unit will not tend to roam from a current associated access point to another at the rate that it would otherwise, where the signal strengths of various access points are similar in magnitude." Clearly, Pinard uses the term "rate" in this context to describe the frequency of migration to different access points (which would otherwise be excessive "where the signal strengths of various access points are similar in magnitude"). This has nothing to do with selecting an alternative access point based on available **data rate**. The passage at column 5, lines 26-31 describes how signal quality from an access point is evaluated at the highest data rate, i.e., different rates are available from the access point, and the highest rate is used to measure signal quality. Again, this has nothing to do with **selecting** an alternative access point based on available data rate. The claimed

limitation is “calculating an indication of whether the alternative access point is preferable as a function of ... distance to the alternative access point ... load on the alternative access point, and available data rate from the alternative access point,” not evaluating signal quality. The Examiner might argue that signal quality is analogous to data rate, but that is not accurate because, as described in the specification at page 52, the available data rate is also a function of technology type.

The Examiner has also asserted that Pinard teaches improved selection of an optimum access point. In support of that assertion the Examiner cites Pinard at column 2, lines 26-35. In fact, the cited passage explicitly contradicts the Examiner’s assertion. The cited passage states that IEEE 802.11 does not set the roaming algorithm, and that there is “no suggestion of how, or by what criteria, other than those mentioned above [i.e., defective access point], the mobile unit might select an appropriate access point, or an optimum access point.”

The Examiner previously asserted that Pinard recognizes “the data rate of incoming broadcast signals.” While that statement is true, Pinard does that for an entirely different purpose than the present invention. Pinard specifically teaches that the data rate observation is done by ASIC 33 in order to **process signals at the appropriate data rate.**³ In contrast with Pinard, the presently claimed invention utilizes available data rate with other metrics to select (or not select) an alternative access point. According to Pinard, access point selection is based on load factor and received signal strength (RSSI) only. As shown in Figure 5 of Pinard, the access point with the lowest load factor is selected. If more than one

³ Column 10, lines 13-18.

access point has the same lowest load factor, then the access point with the highest RSSI is selected. Again, available data rate is not considered.

With regard to claim 3 the Examiner asserts that Pinard teaches use of biased distance at page 13, paragraph 0171. However, the Examiner ignores the distinction between simple “distance” and “biased distance.” The specification describes biased distance in section 4.c.2 *Biased Distance Calculation* at pp. 55-57. Note that biased distance is a specific relationship between corrected distance and load factor. The Examiner has not given consideration to the meaning of the term “biased distance” as defined in the Specification.

Claims 2-5, and 11 are dependent claims which further distinguish claim 1, and which are allowable for the same reasons as claim 1. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

B. The combination of English in view of Pinard further in view of Parks fails to suggest calculating available data rate based on communications protocol mode as recited in claim 12.

Claim 12 is a dependent claim which recites the further step of calculating the data rate available from the alternative access point as a function of: (a) signal strength of at least one communication received from the alternative access point; and (b) communication protocol mode supported by the

alternative access point. The Examiner states that “IEEE 802.11x” must be recited in the claim since applicant “indicates in the Remark that the communication protocol is IEEE 802.11x.” That statement is simply false.

What Applicant wrote in the previous amendment is:

[A] handoff protocol is not equivalent to a communication protocol mode. Examples of communication protocol modes recited in the specification include IEEE 802.11x protocols.⁴ Communication protocols including but not limited to IEEE 802.11x, GSM, UMTS, CDMA and TDMA are not limited to handoff.

Applicant cannot understand how the Examiner could reasonably interpret the quoted remarks as asserting a claim limitation to IEEE 802.11x where the language “examples ... include,” and “including but not limited to” is used, but applicant states here for the record that claim 12 is not limited to IEEE 802.11x.

The Examiner also asserts claim 12 is obvious because Pinard mentions IEEE 802 protocols. That assertion implies a failure to consider the meaning of the recited language. Applicant does not claim to have invented all IEEE 802 protocols. The recited limitation is calculating the data rate available from the alternative access point as a function of: (a) signal strength of at least one communication received from the alternative access point; and (b) communication protocol mode supported by the alternative access point. Pinard fails to suggest any sort of calculation of data rate based on communication protocol mode, let alone communication protocol mode in combination with signal strength.

⁴ See, e.g., page 53, section 4.c.1

Claim 12 is a dependent claim which further distinguishes claim 1, and which is allowable for the same reasons as claim 1. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

VIII. Conclusion

Appellants submit therefore that the rejections of claims 1-5, 11 and 12 under 35 U.S.C. 103 are improper for at least the reasons set forth above. Appellants accordingly request that the rejections be withdrawn and the case put forward for allowance.

Respectfully submitted,

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Appendix A - Claims

1. (previously presented) A method for use by a wireless device in a wireless communications environment, the method comprising the steps of:

associating the wireless device with a current access point;

ascertaining, by the wireless device, whether the wireless device should attempt to associate with an alternative access point, the ascertaining including calculating an indication of whether the alternative access point is preferable as a function of:

distance to the alternative access point as indicated by signal strength of at least one communication received from the alternative access point, and

load on the alternative access point, and

available data rate from the alternative access point; and

requesting association with the alternative access point if it is ascertained that said alternative access point is preferable.

2. (previously presented) The method of claim 1 further comprising the step of:

automatically collecting, by the wireless device, information about alternative access points.

3. (previously presented) The method of claim 2 wherein the step of ascertaining further includes the step of determining that the wireless device should attempt to associate with the alternative access point if the alternative access point has a lower biased distance relative to the wireless device than the current access point.

4. (previously presented) The method of claim 3 wherein the step of ascertaining further includes the step of calculating that the alternative access point has a greater indicated available data rate than the current access point by:

calculating a first biased distance between the wireless device and the current access point based on “x” samples, where “x” is a real number;

calculating a second biased distance between the wireless device and the alternative access point based on “y” samples where “y” is less than “x,” and where “y” is a real number; and

ascertaining that the alternative access point has a greater indicated available data rate than the current access point if the second biased distance is less than the first biased distance.

5. (previously presented) The method of claim 3 further including requesting association by sending a message to the alternative access point.

6. (withdrawn) A method for use by a wireless device in a wireless communications environment, the method comprising the steps of:

associating the wireless device with a first access point on a first channel;

determining, by the wireless device, whether a second access point would provide a better data rate than the first access point; and

requesting, by the wireless device, association with the second access point if it is determined that the second access point would provide a greater data rate than the first access point.

7. (withdrawn) The method of claim 6 wherein the second access point operates on the first channel.

8. (withdrawn) The method of claim 6 wherein the second access point operates on a second channel.

9. (withdrawn) The method of claim 6 wherein the determining step is based at least in-part on signal strength of transmissions from the first and second access points.

10. (withdrawn) The method of claim 6 wherein the determining step is based at least in-part on an indication of loading advertised by the first and second access points.

11. (previously presented) The method of claim 1 including the further step of calculating distance to the alternative access point as a function of: (a) signal strength of at least one communication received from the alternative access point; and (b) an indication of attenuation of transmission power by the alternative access point below maximum potential transmit power.

12. (previously presented) The method of claim 1 including the further step of calculating the data rate available from the alternative access point as a function of: (a) signal strength of at least one communication received from the alternative access point; and (b) communication protocol mode supported by the alternative access point.

Appendix B - Evidence Submitted

None.

Appendix C - Related Proceedings

None.